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NEW DINOSAUR TRACKSITES FROM PERU: EVIDENCE FOR A WIDE DISTRIBUTION OF LARGE THEROPODS DURING THE LATE JURASSIC-EARLY CRETACEOUS IN SOUTH AMERICA

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We describe two new Peruvian tracksites of large tridactyl theropods from the Chimu Formation (Valanginian), close to the Huansala mine (NE Lima), and the Yura Group (Callovian-Neocomian) in Querulpa Chico (N Arequipa). The first site contains three trackways as moulds from the same level and numerous natural casts widespread in different levels. On average, the footprints are 64 cm long, 52 cm wide (max. 83×63) with digit III 20% than laterals. They are characterized by a marked embayment along the inner rear margin of the print and strong curved unguals in each digit. Natural casts display longitudinal striations along the toes but no sign of a hallux print even in the deep impressions. Trackways show a 1.6 m pace, and a 3 m stride length, corresponding to pace angles of 116-171º. We estimate a hip height of 3-4 m and a walking speed of 2.6 km/h. In the Yura Group, we identified fifteen large theropod trackways as moulds at four different outcrops. The footprints are similar to the ones of the Chimu Formation, but some present hallux and tarso-metatarsus impressions. Together with the record of large theropod remains and footprints from Argentina, Brazil and Chile, our observations indicate that large carnivorous dinosaurs, probably, were widely present in South America at least through the Late Jurassic–Early Cretaceous. Moreover, the occurrence of several trackways within the same level suggest that these carnivorous dinosaurs may have lived in a group of several individuals.